PATENT SPECIFICATION

Application Date April 24, 1926. No. 10,679/26. 255,536

Complete Left: May 12, 1926.

Complete Accepted: July 26, 1926.

PROVISIONAL SPECIFICATION.

Improvements in Central Heaters which Operate without Pipes or Radiators.

I, ROBERT JULIAN FOX, of 2, St. Pauls Road, Moseley Road, Birmingham, British subject, do hereby declare the nature of this invention to be as follows:—

This invention relates to a central heater working without pipes and radiators, which, besides heating and humidifying and if required disinfecting the air of a house, hospital, or place of amusement, contains a boiler giving a copious supply of very hot water as well as a cooking oven and plate warmer below. The fuel is preferably coke-anthracite or coalite, and the cold air to be heated may be drawn into the apparatus either through the space surrounding the hot air exit in the top perforated grid or plate or through the space between the supports of the base-plate as may be convenient.

In carrying my invention into practice a bed plate mounted on supports, preferably oblong in plan, is provided, upon the central portion of which is attached an ash box provided with tubular fire bars. Upon the said ash box is connected the furnace portion up the interior and at the back of which the before mentioned tubular fire bars are continued. Upon the furnace portion is connected a continuation or combustion chamber up the interior and at the back of which the said fire bars are still continued. The combustion chamber contains a boiler and receives a portion of an oven.

At the top of the combustion chamber, which is closed in, the before described hollow or tubular fire bar continuations curve towards the front and have outlets through the top of the enclosed chamber. These fire bars with their extensions down and up from air flues through which the cold air passes and so take the place of and are substitutes for the top portion of this form of heater generally called the "radiator", so saving cost in production with a gain in efficiency, and cold air is also heated in its descent and ascent through other channels or passages. The outer walls of the furnace and extension or combustion chamber are furnished with radiation gills or ribs in the usual manner.

Above the combustion chamber is situated a small water tank with projecting lip for filling same the water from which evaporates and mingles with the ascending hot air, thus providing the required humidity so needful from a health point of view. Any medicament may be added to the water and evaporated with it for disinfecting or other purpose. Below the before mentioned ash box is an ash drawer which together with the ash box door is placed at right angles to the feed door of the furnace portion thus affording space for plate heating chamber or fan as the case may be. The ash box door is suspended by hinges and closes on to an angled wall projecting from the outer casing of the apparatus which arrangement permits of this door being opened or closed more or less, by means of a cord attached to an indicating dial plate attached to the upper part of the apparatus, so performing the function of a draught damper as well as a door. As the situation of this door is immediately below the flue pipe extending from the side of the heater, it is easily operated in conjunction with a flue draught regulator without the usual intervening pulley wheels and the like.

The flue pipe from the heater is conducted into a pipe of larger size and so connected to same that there is a crescent

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shaped opening between and the top of the flue pipe is closable by a hinged lid valve whilst the bottom of the outer pipe is closable by a hinged crescent shaped ring valve and the two are connected by a rod and both valves are worked from the before mentioned indicating dial plate in conjunction with the draft ash door.

The inner casing is made of any suitable heat resisting material and extends downward from the top grid to level with the base of the furnace portion of the heater.

The outer casing may be made of any suitable material and may be decorated to suit surroundings. It will be seen that the cold air circulating between the inner and outer casings acts as an insulator and therefore conforms with fire assurance requirements.

Dated this 24th day of April, 1925.

H. GARDNER & SON,
Chartered Patent Agents,
173—1—5, Fleet Street, London, E.C. 4,
Agents for the said Applicant.

COMPLETE SPECIFICATION.

Improvements in Central Heaters which Operate without Pipes or Radiators.

I, ROBERT JULIAN FOX, of 2, St. Pauls Road, Moseley Road, Birmingham, British subject, do hereby declare the nature of this invention and in what manner the same is to be performed, to be particularly described and ascertained in and by the following statement:—

This invention relates to a central heater working without pipes and radiators, which, besides heating and humidifying and if required disinfecting the air of a house, hospital, or place of amusement, may contain a pressure boiler giving a copious supply of very hot water as well as a cooking oven and plate warmer below. The fuel is preferably coke, anthracite or coalite, and the cold air to be heated may be drawn into the apparatus either through the space surrounding the hot air exit in the top perforated grid or plate or through the space between the supports of the base plate as may be convenient.

My invention consists in a heating apparatus comprising a base, an ash pit above the central portion of the base, hollow bars forming air flues leading upward from the base, then at an angle to form fire bars, then upward and forward, a casing surrounding the front, sides, and back of the fire bars to form a grate and combustion chamber, a flue leading from the combustion chamber, an air passage extending round each side and back of the grate and combustion chamber and communicating with an air chamber on top thereof, a door at front for feeding the fire grate and a door to the ash pit and an ash drawer at right angles to feed door, a valve on the flue pipe, a large pipe surrounding the flue pipe with a crescent shaped air opening between the two and a crescent shaped valve controlling the air entrance to such large pipe, the two valves being actuated simultaneously by mechanism operated from a dial together with the ash pit door, and I may also employ a pressure boiler in the combustion chamber and a water vessel for humidifying or disinfecting purposes.

My invention will be clearly understood from the following description aided by the annexed drawings in which

Figure 1 is a side elevation of a complete heater.

Figure 2 is a front elevation of a complete heater.

Figure 3 is a part sectional side view.

Figure 4 is part sectional front view.

Figure 5 is a section on the line *a a* of Figure 3.

Figure 6 is an enlarged view of a portion of the flue and showing the flue and air valves.

Figure 7 is a plan of the flue valve.

Figure 8 is sectional plan of the air valve.

In carrying my invention into practice a bed plate 1 mounted on supports 2, preferably oblong in plan, is provided, upon the central portion of which is attached an ashbox 3 above which is positioned tubular fire bars, 4, preferably inclined and depending down the front of the ashbox and passing upward as at 4^a to form the back of the fire grate and combustion chamber 5 and thence forward to form the greater part of the top of the combustion chamber 5 where they are provided with outlets registering with openings formed in the top of a plate 7 which continues down next the outside of the pipes or air flues 4^a to the base plate 1. The combustion chamber 5 may contain a boiler 6 connected up by pipes 6^a, 6^a, to a hot water tank and such chamber

can also receive an oven 8 held on brackets 9, 9 or otherwise to side walls 10, 10 of the combustion chamber 5.

The side walls 10, 10 connect up the plate 7 with the front 11 and outside of these side walls 10, 10, are at spaced distances apart, two plates 12, 13, 12, 13 and outside the back plate 7 are two plates 14, 15, the plates 12, 14 forming division plates whilst the plates 13, 15 form the outer plates or walls of the stove, the plates 12, 14 not continuing to the bottom so as to form air flues. The fire bars 4 with their extensions 4^b down and 4^a up, form air flues, through which the cold air passes and so take the place of and are substitutes for the top portion of this form of heater generally called the "radiator", so saving cost in production with a gain in efficiency, and cold air is also heated in its descent and ascent through other channels or passages 18, 19 between the plates 12, 13, 14, 15. The plate 7 and side walls 10, 10, of the furnace and combustion chamber may be furnished with radiation gills or ribs in the usual manner.

Above the plate 7 is a chamber 16 the top being provided with a grid 20 covering the whole of the heater and through which cold air to the passage 19 and hot air from the passages 4^a, 18 pass.

Within the chamber 16 may be situated a small water tank 21 with projecting lip 22 for filling same, the water from which evaporates and mingles with the ascending hot air, thus providing the required humidity so needful from a health point of view. Any medicament may be added to the water and evaporated with it for disinfecting or other purpose. Below the before mentioned ash box 3 is an ash drawer 23 which together with the ash box door 24 is placed at right angles to the feed door 25 of the fire grate thus affording a space for a plate heating chamber 26. The ash box door is suspended by hinges and closes on to an angled wall projecting from the outer casing of the apparatus which arrangement permits of this door being opened or closed more or less, by means of a chain 27 attached to an indicating dial plate 28 attached to the upper part of the apparatus, so performing the function of a draught damper as well as a door. As the situation of this door 24 is immediately below the flue pipe 29 extending from the side of the heater, it is easily operated in conjunction with a flue draught regulator lid valve 30 without the usual intervening pulley wheels and the like.

The flue pipe 29 from the heater is conducted into a pipe 31 of larger size and so connected to same that there is a crescent shaped opening between and the top of the flue pipe is partially closable by the hinged lid valve 30 having an orifice 30^a whilst the bottom of the outer pipe 31 is closable by a hinged crescent shaped ring valve 32 and the two are connected by a rod 33 and both valves 30, 32 are worked from the before mentioned indicating dial plate 28 in conjunction with the draft ash door, the dial plate carrying a chain 34 which is connected to a projection 35 on the valve 32 and also carries the chain 27 connecting the door 24 so that on a movement of the dial plate the valves 30, 32 and door 24 will be moved.

The plate 7, side walls 10, 10, and front 11 are made of any suitable heat resisting material and the walls 10, 10, and front 11 extend downwards from top grid 20 to level with the base 1.

The outer casing 13, 15 may be made of any suitable material and may be decorated to suit surroundings. It will be seen that the cold air circulating between the inner and outer casings acts as an insulator and therefore conforms with fire assurance requirements.

Having now particularly described and ascertained the nature of my said invention and in what manner the same is to be performed, I declare that what I claim is:—

1. A heating apparatus comprising a base, an ash pit above the central portion of the base, hollow bars forming air flues leading upward from the base, then at an angle to form fire bars, then upward and forward, a casing surrounding the front, sides, and back of the fire bars to form a grate and combustion chamber, a flue leading from the combustion chamber, an air passage extending round each side and back of the grate and combustion chamber and communicating with an air chamber on top thereof, a door at front for feeding the fire grate and a door to the ash pit and an ash drawer at right angles to feed door, a holed valve on the flue pipe, a large pipe surrounding the flue pipe with a crescent shaped air opening between the two, and a crescent shaped valve controlling the air entrance to such large pipe, the two valves being actuated simultaneously by mechanism operated from a dial together with the ash pit door.

2. In a heating apparatus as claimed in Claim 1 the combination therewith of a pressure boiler in the combustion chamber.

3. In a heating apparatus as claimed in Claim 1 the combination of an oven in the combustion chamber.

4. In a heating apparatus as claimed in Claim 1 the combination of a water vessel for humidifying and disinfecting purposes placed at top of the heater.

5. The construction of heater substantially as described and as shown on the annexed drawings.

Dated this 12th day of April, 1925.

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Agents for the said Applicant.

Redhill: Printed for His Majesty's Stationery Office, by Love & Malcomson, Ltd.—1926.

Fig. 1.

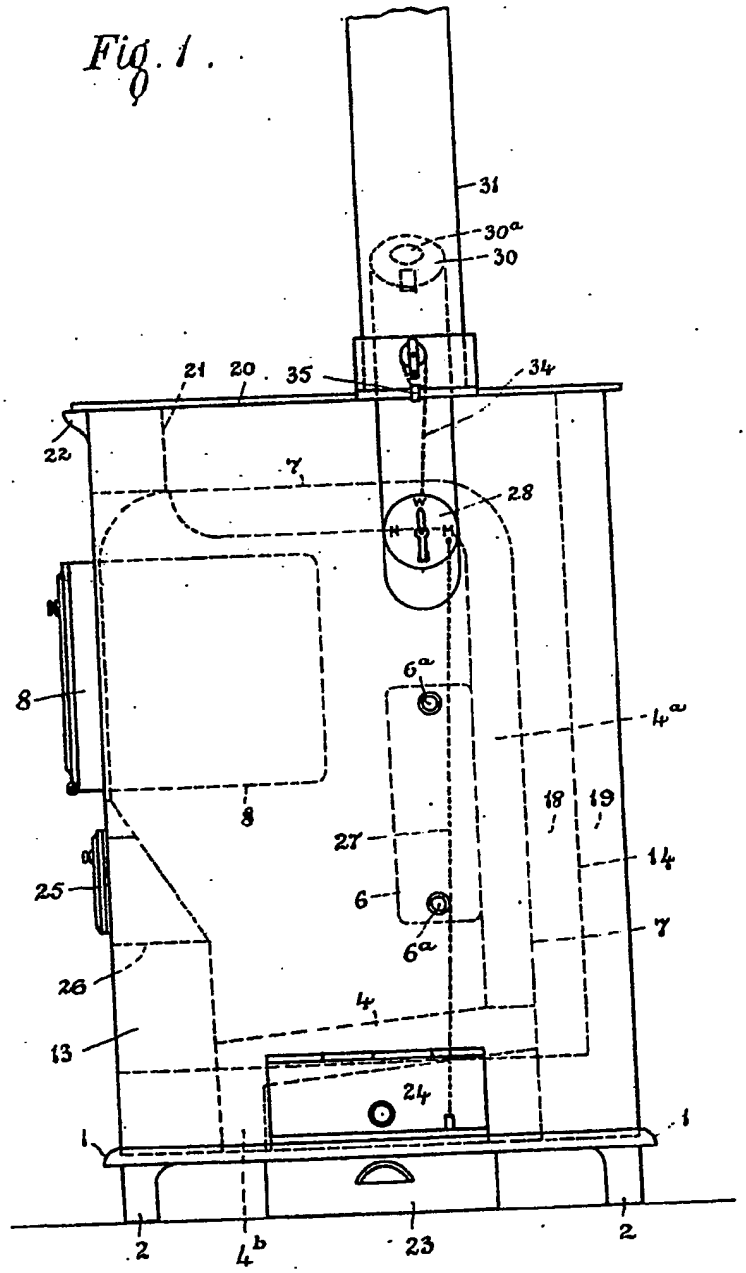

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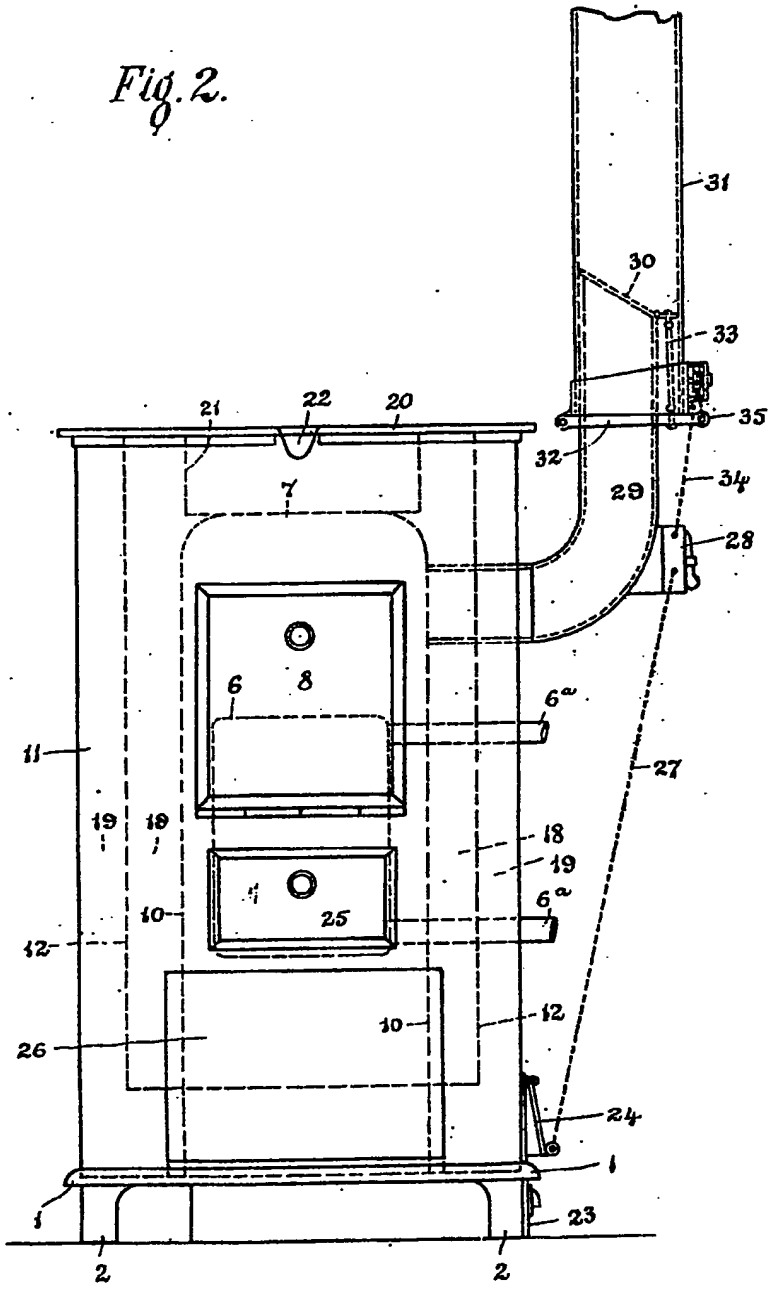
Fig. 2.



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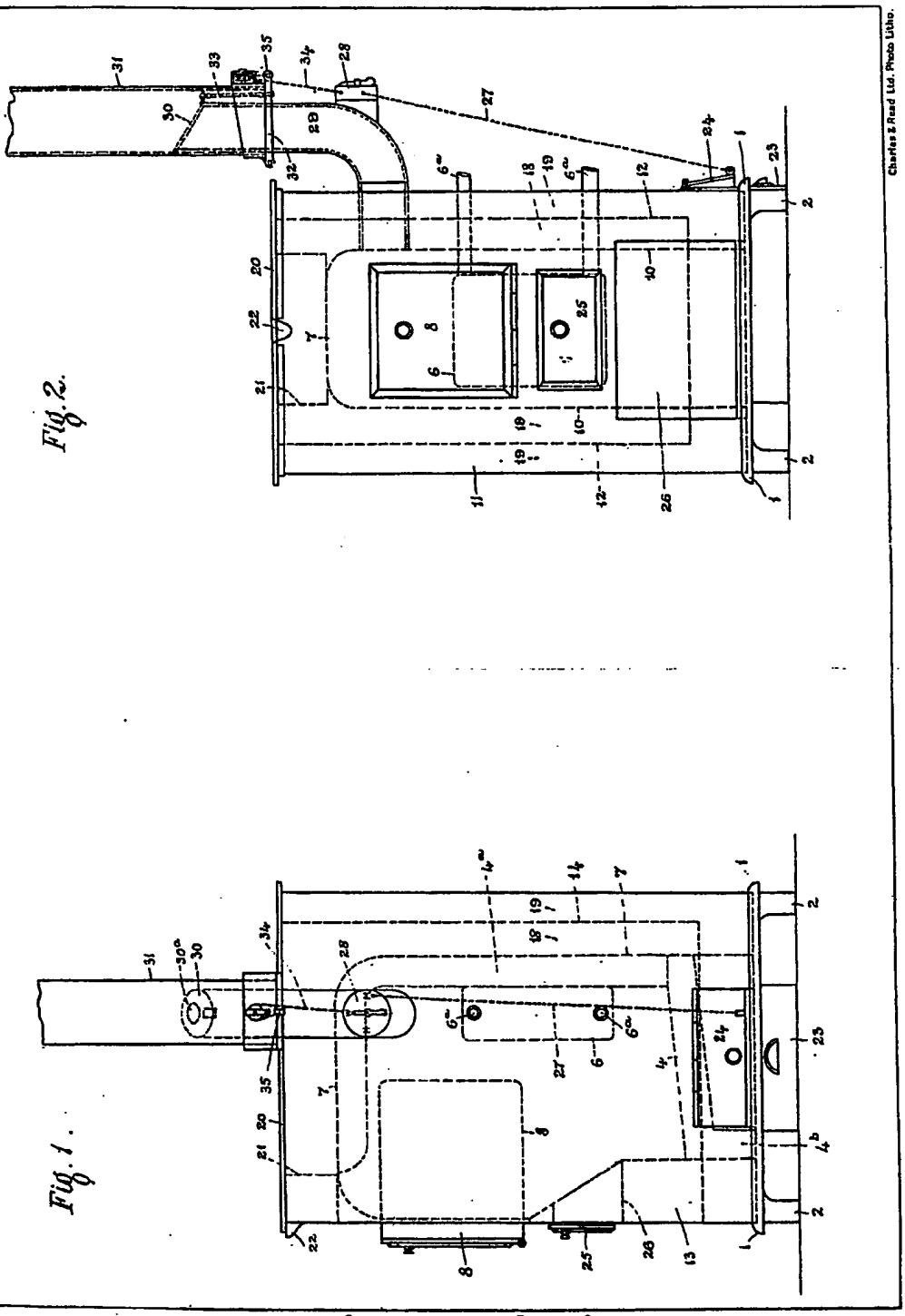

Fig. 2.

Fig. 1.

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Fig. 3.

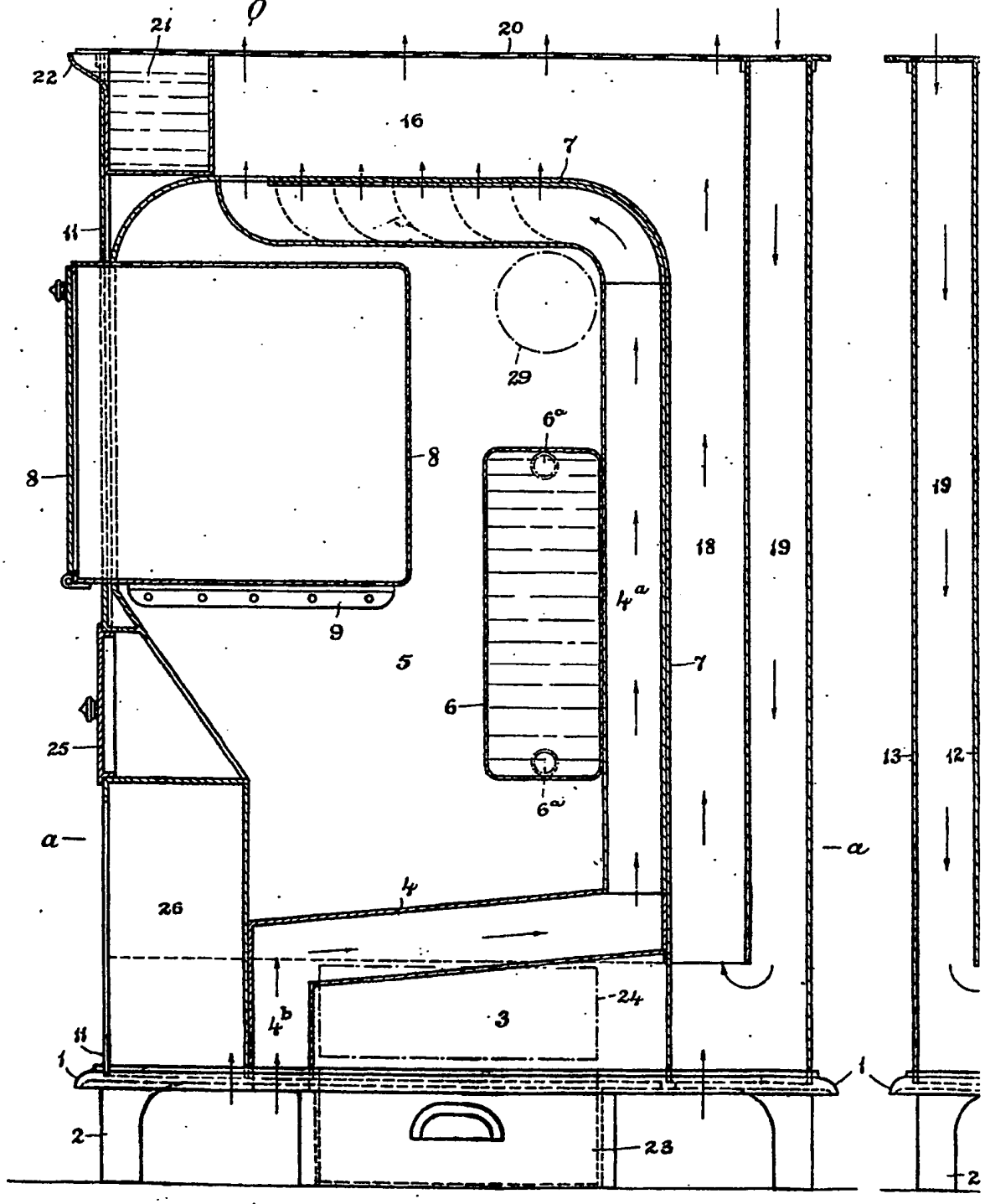

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Fig. 4.

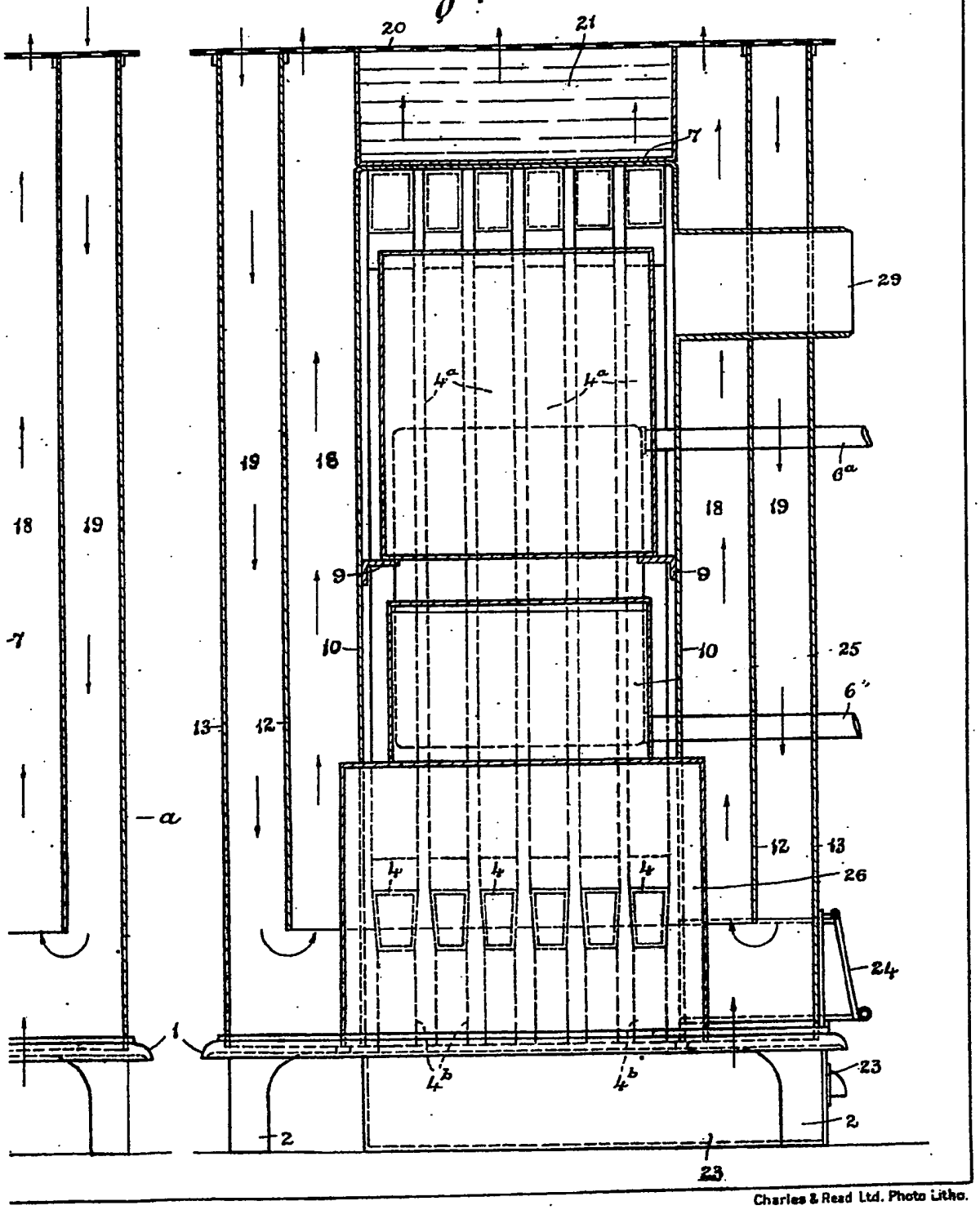

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Fig. 3.

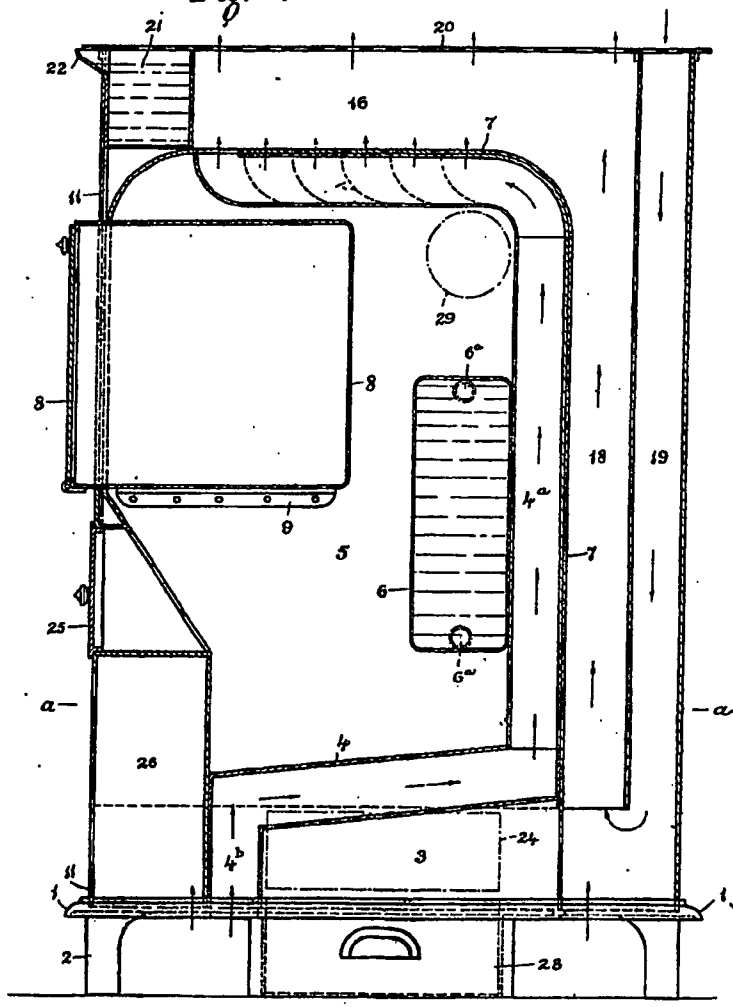

Fig. 4.

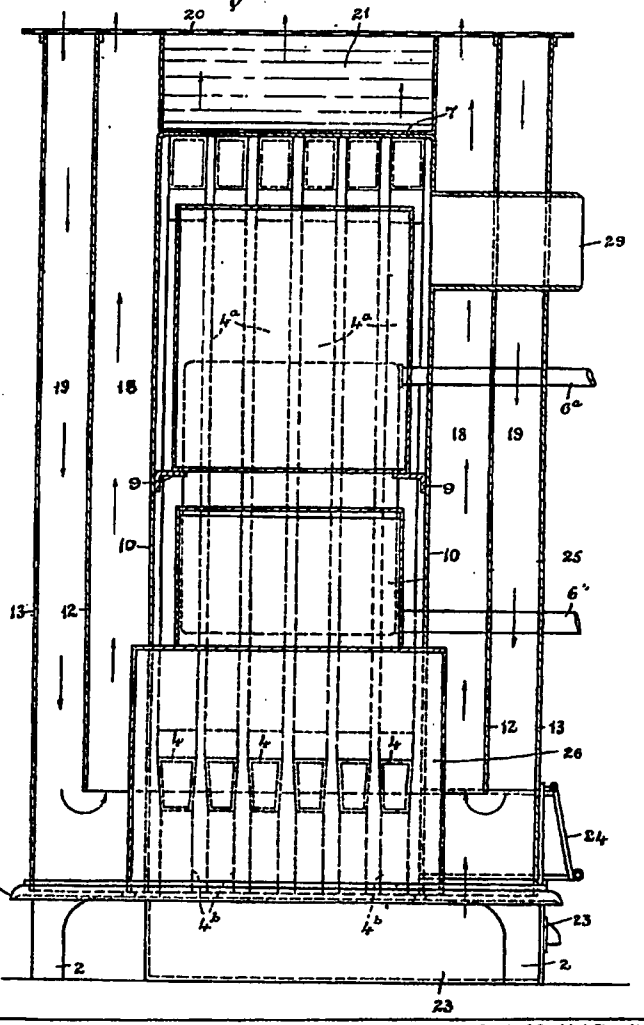

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Fig. 5.

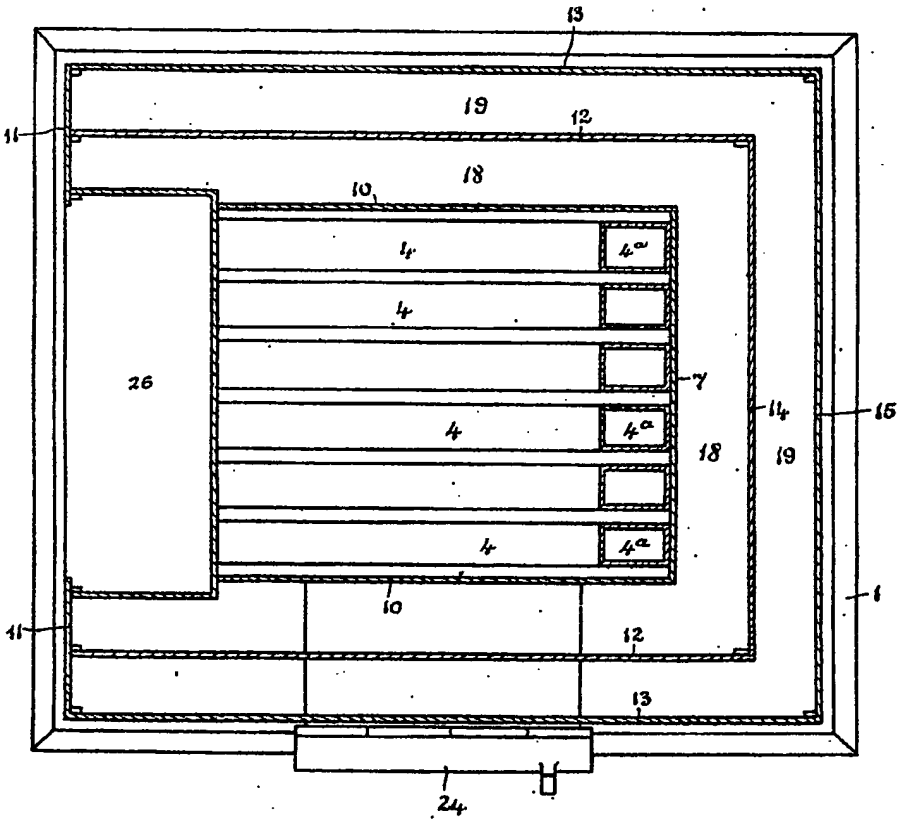

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Fig. 6

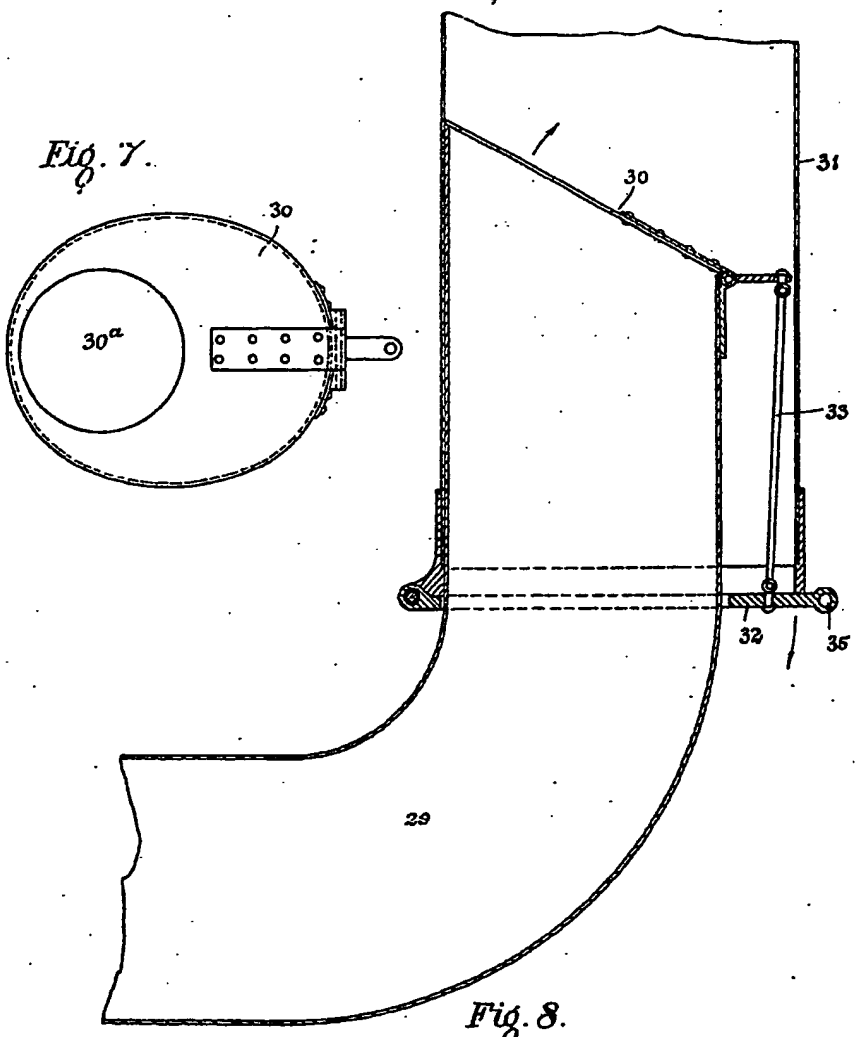

Fig. 7.

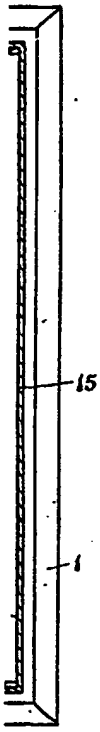

Fig. 8.

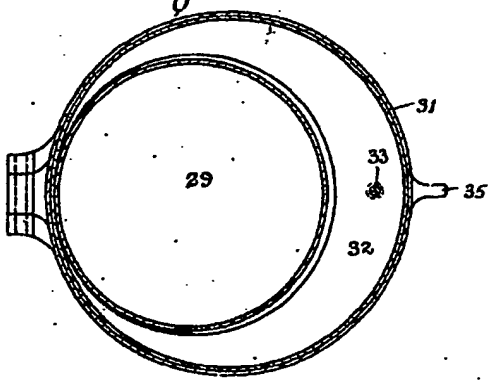

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Fig. 5.

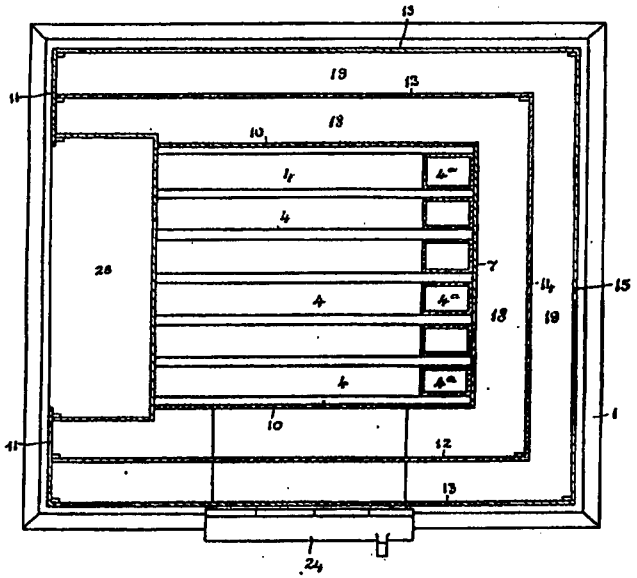


Fig. 6

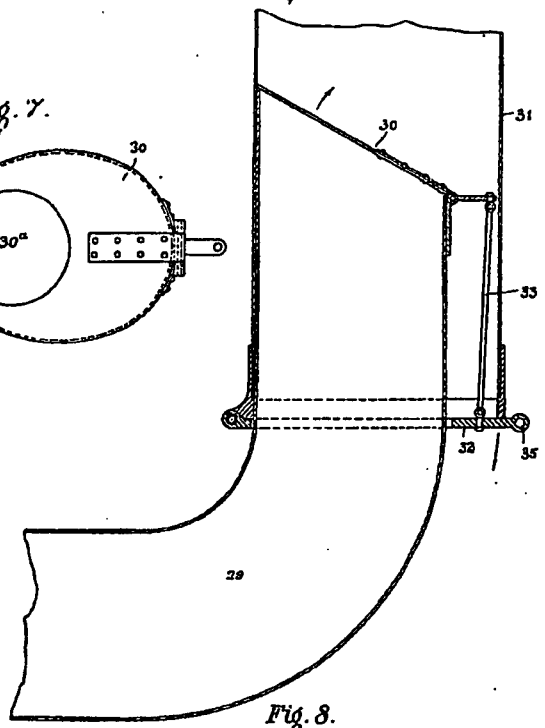
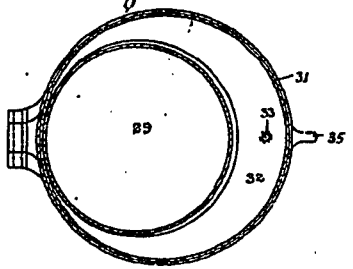


Fig. 7.

Fig. 8.



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